CLAIMS

What is claimed is:

1.   In a system for providing data content to and from a plurality of mobile platforms, each of the mobile platforms transmitting a return link having an EIRP to a predetermined location via a satellite-mounted transponder, a method for controlling an EIRP of the aggregate return link emissions of the mobile platforms, the method comprising the steps of:

determining a probability distribution of the EIRP of the return link for each of the mobile platforms;

determining a probability distribution of the EIRP for the aggregate return link emissions using the probability distributions of the EIRP of the return link for each of the mobile platforms; and

determining an aggregate off-axis EIRP density envelope for a predetermined probability level and the probability distribution of the EIRP for the aggregate return link emissions.

2.   The method of Claim 1, wherein the probability distribution of the EIRP for at least one return link is determined numerically.

3.   The method of Claim 2, wherein a plurality of Monte Carlo trials are employed to numerically determine the probability distribution of the EIRP of the at least one return link.

4.   The method of Claim 3, wherein 30 Monte Carlo trials are employed to numerically determine the probability distribution of the EIRP of the at least one return link.

5.   The method of Claim 1, wherein the probability distribution of the EIRP for at least one return link is determined analytically.

6.   The method of Claim 5, wherein each error source is assumed to be normal and the probability distribution is the square root of the sum of the squares of each of a plurality of individual error distributions.

7.   The method of Claim 1, wherein the step of determining a probability distribution of the EIRP for the aggregate return link emissions includes the step of scaling each of the EIRP of the return link probability distributions by a scaling fraction that is equal to the actual EIRP of the return link divided by the peak EIRP of the return link.

8.   The method of Claim 1, wherein the step of determining the probability distribution of the aggregate off-axis EIRP density envelope includes the steps of:

determining a mean value of the aggregate off-axis EIRP probability;

determining a standard deviation of the aggregate off-axis EIRP probability; and

calculating the probability distribution of the aggregate off-axis EIRP density envelope by adding the mean value to the product of the standard deviation and a predetermined value that is associated with the predetermined probability level.

9.   The method of Claim 1, wherein the predetermined probability level is at least 99.7%.

10.   The method of Claim 9, wherein the predetermined probability level is at least 99.9%.

11.   The method of Claim 1, further comprising the step of controlling the mobile platforms such that the EIRP of the aggregate return link emissions is within the aggregate off-axis EIRP density envelope at the predetermined probability level.

12.   In a system for providing data content to and from a plurality of mobile platforms, each of the mobile platforms transmitting a return link having an EIRP to a predetermined location via a satellite-mounted transponder, a method for controlling an EIRP of the aggregate return link emissions of the mobile platforms, the method comprising the steps of:

determining a probability distribution of the EIRP of the return link for each of the mobile platforms;

scaling each of the EIRP of the return link probability distributions by a scaling fraction that is equal to the actual EIRP of the return link divided by the peak EIRP of the return link;

determining a probability distribution of the EIRP for the aggregate return link emissions using the probability distributions of the EIRP of the return link for each of the mobile platforms; and

determining an aggregate off-axis EIRP density envelope for a predetermined probability level and the probability distribution of the EIRP for the aggregate return link emissions; and

controlling the mobile platforms such that the EIRP of the aggregate return link emissions is within the aggregate off-axis EIRP density envelope at the predetermined probability level.

13. The method of Claim 12, wherein a plurality of Monte Carlo trials are employed to numerically determine the probability distribution of the EIRP of the at least one return link.

14. The method of Claim 13, wherein about 30 Monte Carlo trials are employed to numerically determine the probability distribution of the EIRP of the at least one return link.

15. The method of Claim 12, wherein the step of determining the probability distribution of the aggregate off-axis EIRP density envelope includes the steps of:

determining a mean value of the aggregate off-axis EIRP probability;

determining a standard deviation of the aggregate off-axis EIRP probability; and

calculating the probability distribution of the aggregate off-axis EIRP density envelope by adding the mean value to the product of the standard deviation and a predetermined value that is associated with the predetermined probability level.

16. The method of Claim 12, wherein the step of determining the probability distribution of the aggregate off-axis EIRP density envelope includes the steps of:

determining a mean value of the aggregate off-axis EIRP probability;

determining a standard deviation of the aggregate off-axis EIRP probability; and

calculating the probability distribution of the aggregate off-axis EIRP density envelope by adding the mean value to the product of the standard deviation and a predetermined value that is associated with the predetermined probability level.

17.   The method of Claim 12, wherein the predetermined probability level is at least 99.7%.

18.   The method of Claim 17, wherein the predetermined probability level is at least 99.9%.

19.   In a system for providing data content to and from a plurality of mobile platforms, each of the mobile platforms transmitting a return link having an EIRP to a predetermined location via a satellite-mounted transponder, a method for controlling an EIRP of the aggregate return link emissions of the mobile platforms, the method comprising the steps of:

determining a probability distribution of the EIRP of the return link for each of the mobile platforms, each of the probability distributions being determined numerically through a plurality of Monte Carlo trials;

scaling each of the EIRP of the return link probability distributions by a scaling fraction that is equal to the actual EIRP of the return link divided by the peak EIRP of the return link;

determining a probability distribution of the EIRP for the aggregate return link emissions using the probability distributions of the EIRP of the return link for each of the mobile platforms;

determining a mean value of the aggregate off-axis EIRP probability;

determining a standard deviation of the aggregate off-axis EIRP probability;

calculating a probability distribution of an aggregate off-axis EIRP density envelope by adding the mean value to the product of the standard deviation and a predetermined value that is associated with a predetermined probability level; and

controlling the mobile platforms such that the EIRP of the aggregate return link emissions is within the aggregate off-axis EIRP density envelope at the predetermined probability level.

20.   The method of Claim 19, wherein the predetermined probability level is at least 99.7%.